

morning report of the 15th showed the centre of disturbance over Lake Superior, the barometer at Duluth, Minnesota, reading 29.57, or .37 below the normal, and cloudy and rainy weather now prevailed in the upper Mississippi and Missouri valleys, the lake region, and Ohio valley. At the succeeding report the centre of disturbance had changed but slightly, remaining over Lake Superior, and the same weather conditions prevailed in the districts before named, except in the Missouri valley, where the weather had cleared. From 3 p. m. of the 15th to 7 a. m. of the 16th the centre of depression was transferred from Lake Superior to the Gulf of Saint Lawrence, where it remained nearly stationary until the afternoon of the 17th, when it disappeared in advance of a high area then approaching from the westward. Signals displayed for this storm were justified on Lakes Michigan and Erie, but on Lakes Huron and Ontario the winds did not reach a velocity to justify the display. Signals were also ordered on the Atlantic coast from Cape May northward, but, in most instances, they were not justified. The highest temperatures recorded during the month along the Atlantic coast north of Virginia, occurred on the 15th and 16th.

VI.—This disturbance was first observed as a well-defined low area of slight energy on the afternoon of the 20th, central near Moorhead, Minnesota, where the barometer at the 3 p. m. observation read 29.69, or .18 below the normal. Since the afternoon of the 18th the barometer had been slightly below the normal in the extreme northwest, while it was above the normal in all other districts and cloudy weather with light rains prevailed in the upper Mississippi and Missouri valleys on the 19th and 20th. At the 2 p. m. report of the 20th the depression extended to the southwestward and southeastward, and the chart for the midnight observation of the 20th showed a depression, inclosed by the isobar for 29.8, central in the Missouri valley, while the principal depression was moving slowly into the lake region, and at this report was central over Lake Superior. On the morning of the 21st the depression was central near Escanaba, Michigan, where the barometer read 29.70, or .24 below the normal. The subsidiary disturbance, before referred to, had reached central Illinois, having caused during its passage very heavy rains in the lower Missouri and central Mississippi valleys. During the succeeding sixteen hours both depressions united and at midnight the centre was shown near Rockliffe, Ontario, the barometer ranging from .20 to .30 below the normal from the lower Saint Lawrence, to the upper Ohio valley. Very heavy rains and high winds to gales occurred at the lower lake stations during the passage of the depression; the following rainfalls were reported at the 11 p. m. observation of the 21st: Sandusky, Ohio, 1.50 inches; Cleveland, Ohio, 2.12 inches; Erie, Pennsylvania, 2.98 inches; Buffalo, New York, 1.35 inches. On the morning of the 22d, the centre of depression was near Montreal, the barometer at that station reading 29.36 (.57 below the normal), or a fall of .54 in twenty-four hours, and during the preceding eight hours very heavy rains and high winds to gales had prevailed at stations on Lake Ontario. During the next sixteen hours the storm passed down the Saint Lawrence valley and at 11 p. m. was central over the Gulf of Saint Lawrence, with diminished energy, the barometer having risen .20 at the centre of the depression in sixteen hours. Signals were displayed in advance of this storm on the lakes and on the Atlantic coast from Wilmington, North Carolina, northward, and were justified, except at stations on the coast of Maine.

VII.—At the 11 p. m. report of the 27th this disturbance was central in northern Michigan, and cloudy weather with light rains prevailed from the extreme northwest to the Atlantic coast. On the morning of the 28th the centre of disturbance was near Saugeen, Ontario, the pressure remaining unchanged, and threatening and rainy weather continued in the lake region and on the Atlantic coast. The rainfall at Baltimore, Maryland, during the eight hours ending at 7 a. m. was 4.18 inches. The centre of this depression moved to the eastward during the next twenty-four hours and was central near

Burlington, Vermont, on the morning of the 29th; its course then changed to the southeast, and the depression passed off the New England coast on the morning of the 30th. The closing reports of the month showed the disturbance to be slowly moving towards the Bay of Fundy with the pressure decreasing at the centre, and attended by high winds to moderate gales from east to southeast over the Maritime Provinces. Signals were ordered for this storm along the Atlantic coast from Cape May, New Jersey, to Portland, Maine, and were justified at all stations.

NORTH ATLANTIC STORMS DURING JUNE, 1885.

[Pressure expressed in inches and in millimetres; wind-force by scale of 0-10.]

The paths of the depressions that have appeared over the north Atlantic ocean during the month have been determined, approximately, from international simultaneous observations furnished by captains of ocean steamships and sailing vessels; abstracts of ship's logs and other data collected by the Signal Service agencies at the ports of New York, Boston, and Philadelphia; reports furnished through the co-operation of the "New York Herald Weather Service," ships' logs furnished by the proprietors of the "New York Maritime Register," and from other miscellaneous data received at this office up to July 21st, 1885.

Six depressions have appeared within the area covered by the observations; of this number, all but one (number 1) were apparently depressions which originated in, and traversed, the North American continent. The exception referred to was a depression which occupied the ocean near the fortieth parallel and between W. 35° and 55° during the 2d and 3d, after which date it probably merged in one of the above-mentioned depressions.

Only two of the depressions charted appear to have approached the European coast; the eastward movement of numbers 3 and 4 was checked by an extensive area of high barometer which occupied the ocean to the eastward of 30° W. on the 9th and which, spreading westward, caused the depressions to disappear on the 10th; number 6, after crossing northern Newfoundland, disappeared beyond the range of observation on the 25th. The general direction of movement of the depressions during June, 1885, was east-northeasterly. The most severe storm of the month was that traced as number 3; during the 6th and 7th the barometer fell to 29.0 (736.6), which is unusually low for storms of the summer months, and violent gales prevailed until the 9th; along the coast of Newfoundland this storm was especially disastrous. It is estimated that more than fifty vessels were totally wrecked on that coast, while a large number were driven ashore and seriously damaged; number 2 was also severe during the first three days of the month, having caused considerable damage to shipping and other property along the coast of Cape Breton island.

The weather over the north Atlantic during June, 1885, was, with the exception of the periods above referred to, generally moderate and fine; days of cloudy weather, with light to heavy rains, were frequently reported, but were generally followed by clear and pleasant weather.

During the first decade of the month the atmospheric pressure remained relatively low over the region between N. 40° and 50°, but at the beginning of the second decade an area of high pressures occupied this region and continued generally until the close of the month.

The following are descriptions of the depressions charted:

1.—When the centre of the depression described as i., under "Areas of low barometer" was over Cape Breton island, a decrease of pressure occurred near N. 40°, W. 50°, and the circulation of the winds indicated that another disturbance had developed. The pressure over the above-mentioned region ranged from 29.45 (748.0) to 29.6 (757.8), and strong breezes to moderate gales from w. and nw. occurred to the westward of the fifty-fifth meridian, while moderate s. and e. winds prevailed to the eastward of W. 50°. By the 3d this disturbance

had passed to about N. 41°, W. 38°, with pressure about the same as on the preceding day; between W. 42° and 35° and N. 40° and 45° the winds blew from ne. with the force of a fresh to strong breeze; to the westward of W. 45° they had shifted to southerly in advance of depression number 2, which had now left the coast. During the 4th this depression apparently united with the above, the combined systems causing rainy weather and moderate gales.

2.—This was a continuation of the disturbance described as low area i. under "Areas of low barometer." As it left the coast of Cape Breton island, where it had displayed considerable storm-energy, the pressure at the centre of depression was less than 29.5 (749.3); on the 3d the storm-centre was apparently near the southwestern edge of the Banks, with probably a slight rise in pressure, the marine observations to hand indicating pressures ranging from 29.6 (751.8) to 29.7 (754.4). Strong breezes to moderate gales from sw. to w. and nw. occurred during this date, but on the following day, when the storm-centre had reached about N. 43°, W. 43°, the winds increased somewhat in force and were reported as fresh to strong gales, and the pressure ranged from 29.35 (745.5) to 29.5 (749.3) over the region between W. 40° and 50°. The disturbance continued its easterly movement during the 5th and 6th, causing nw. and n. gales to the westward of the thirty-eighth meridian and strong e. and se. winds over the region between N. 45° and 50° and east of 35° W.; during those dates the barometer varied from 29.55 (750.6) to 29.7 (754.4). By the 7th the depression had moved northeastward and was central to the southwestward of Ireland, with pressure, as shown by the observations, about 29.68 (753.8) to 29.71 (754.6).

3.—This was a continuation of low area ii. described under "Areas of low barometer." It passed into the Atlantic from the New Jersey coast during the 5th, with decreasing pressure and increasing storm-energy, and, by the 6th, when the centre was to the southeastward of Nova Scotia, the barometer had fallen to 29.0 (736.6). It moved slowly north of east during the 6th, and on the 7th it was central near the eastern edge of the Banks, the pressure remaining about the same as on the preceding day. During those dates violent gales from ssw. to sw., w., and nw. occurred over the region from W. 60° to 35° and, from the great damage sustained by the fishing interests of Newfoundland, this storm is considered to have been the most disastrous that has visited the colony in forty years.

The following are some of the lowest barometer readings reported during the passage of this disturbance: on the 6th the ship "Union," H. Fokken, commanding, in about N. 41° 35', W. 62° 31', had very unsettled weather with variable and baffling winds, rain and fog; at 8 a. m. the wind shifted to ne., increasing rapidly until it blew a whole gale, with heavy rain for two hours; after 10 a. m. the wind decreased and the weather cleared; lowest barometer, 29.37 (746.0). The bark "Christina," S. E. Witter, commanding, in N. 38° 30', W. 59° 40', on the 6th, had a heavy gale from sw., veering to nw., with heavy cross sea, thunder, lightning, and heavy rain; lowest barometer, 29.31 (744.5). S. S. "Servia," W. McMickan, commanding, reported a gale from nw., lasting until 5 p. m.; the wind veered as far as ne. during the gale, and then backed to n., from which quarter it ended; the lowest barometer was 29.08 (738.6), at 9 a. m. on the 6th, in N. 41° 23', W. 59° 30'; the greatest force of the wind was 8 (Beaufort scale).

The s. s. "British Queen," A. Smith, commanding, in N. 40° 44', W. 53° 30', had a whole gale from s. to sw., w., and nw.; lowest barometer, 29.26 (743.2), at 10 p. m. of the 6th. S. S. "Rugia," A. Albers, commanding, reported whole gale from ssw. to w. and nw.; lowest barometer, 28.95 (735.3), at 6 p. m. of the 6th. S. S. "America," G. Meyer, commanding, in N. 37° 20', W. 52° 40', had barometer 29.52 (749.8) (error unknown), at 7 p. m. of the 6th, with strong gale from sse. to sw. The s. s. "Geiser," F. V. Schjerbeck, commanding, reported: "June 6th, weather rainy with strong winds from s. by w. to wsw. and heavy sea, barometer falling; 11 p. m. wind s., force 7, heavy rain, wind and sea increasing; at 3

a. m. of the 7th, barometer 29.31 (744.5), wind s., blowing a gale; 6 a. m., in N. 42° 47', W. 45° 37', barometer 29.23 (742.4), wind s. by w., force 7-9; 7.30 a. m. (7th), barometer 29.22 (742.2), wind shifted, in a heavy rain squall which lasted four minutes, to wsw.; at 9 a. m. the barometer began to rise, and during the following twenty-four hours we had a gale from wsw." The s. s. "Nessmore," J. Inch, commanding, reported that at 10.30 p. m. of the 6th the wind increased to a heavy gale with high sea, barometer falling; at midnight it was blowing with unabated fury, the wind shifting from nw. to wsw. On the 7th, in N. 40° 57', W. 50° 4', the barometer (error unknown) read 28.84 (732.5), with w. gale of force 9.

On the 7th the s. s. "Amérique," P. Santelli, commanding, had a whole gale in N. 40° 30', W. 53° 20', wind veering from sw. to nw.; lowest barometer, 29.37 (746.0), at 8 a. m. The s. s. "British Empire," Captain Wills, had a nw. gale at 8 a. m. of the 7th, lasting until 4 p. m. of the 9th, during which time the wind backed to sw. The greatest force was 8, at 1 a. m. of the 8th, from west, and the lowest barometer reading was 29.12 (739.6), at 2 a. m. of the 7th, in N. 41° 23', W. 48° 20'. The s. s. "State of Pennsylvania," Captain Mann, had a w. gale from noon of the 6th until noon of the 10th. The greatest force was 10, from 1 a. m. to noon on the 9th; the lowest barometer, 28.92 (734.6), at 2 a. m. of the 7th, in N. 41° 40', W. 48° 10'.

The s. s. "Edam," J. H. Taat, commanding, had a gale of force 10 from the 7th until the 9th; the lowest barometer was 29.10 (739.1), in N. 44° 40', W. 44° 50', at 1.30 p. m. on the 7th; the gale set in at ssw., and veered to sw. and w. The s. s. "City of Chicago," F. Watkins, commanding, had a whole gale, lasting from noon of the 7th until midnight of the 9th; the lowest barometer, 29.12 (739.6), was observed at 1 p. m. on the 7th, in N. 45° 30', W. 39° 50'; the gale began at sse., and hauled to wsw. for one hour, then backed again to sw. by s. for 12 hours, until 2 a. m. of the 8th; it then hauled to wsw. and w., and at midnight it again backed to sw. by s., and s., and continued until midnight of the 9th, when it hauled to w., and began to moderate. The s. s. "Phoenix," B. Davies, commanding, had a fresh gale lasting from the 6th till the 10th; the lowest barometer was 29.56 (750.8), in N. 48° 33', W. 33° 33', at 9 p. m. of the 7th; the gale began at ese., and veered to se., s., and sw. to wsw. and wnw.

By the 8th the pressure had increased to about 29.6 (751.8), and the region of least pressures was shown near N. 48°, W. 38°, and on the 9th the readings remained about the same, but the lowest pressures were somewhat farther to the westward than on the preceding day; during these dates there was no abatement of the violent gales which had prevailed over the ocean between N. 40° and 50°, and W. 60° and 30°. An area of high barometer occupied the region east of W. 30° on the 9th, and this apparently barred the advance of the depression and probably forced it to the westward on the 9th and 10th. On the last-mentioned date the disturbance began to lose energy, and by the 11th it had disappeared from the chart, having apparently filled in.

4.—This was a continuation of low area iii.; it passed over the Gulf of Saint Lawrence during the 8th, with pressure near the centre about 29.2 (741.7). On the 9th it occupied southern Newfoundland, causing westerly gales over the ocean to the southward. During the day it moved eastward over the ocean and probably united with the preceding depression on the 10th, disappearing with that disturbance in the course of the twenty-four hours.

5.—This was a continuation of low area iv.; when crossing the Gulf of Saint Lawrence on the 15th it appeared to be losing energy, and on the 16th, when it occupied Newfoundland, its attendant winds did not exceed the force of a strong breeze. During the 17th and 18th it moved northeastward north of the fiftieth parallel; vessels on the southern edge of the disturbance reported barometer ranging from 29.7 (754.4) to 29.8 (756.9) with moderate to strong southwest winds. On the 19th it was apparently near the northwestern coast of Scotland.

6.—This was a continuation of low area vi. described under "Areas of low barometer." As it passed northeastward over the Gulf of Saint Lawrence and northern Newfoundland during the 23d and 24th it was attended by moderate s. to sw. and w. gales over the ocean between W. 55° and 65° and north of the fortieth parallel. On the 25th the disturbance passed northeastward beyond the range of the observations.

OCEAN ICE.

On chart i. are also shown the eastern and southern limits of the north Atlantic ice-region for June, 1885. These limits are determined from reports furnished by shipmasters, and from trustworthy data published in the "New York Maritime Register" and other newspapers.

During the month icebergs have been observed as far to the eastward as W. 41° 10', and on various parallels of latitude between N. 42° and 50°; from about 42° 30' N., 41° 30' W. the edge of the ice-region trends in a southwesterly direction to about 39° 38' N., 48° 12' W. (the southernmost iceberg observed); from this point the line runs northwestward to the southern coast of Newfoundland, the westernmost bergs being observed in 47° N., 57° W. Many icebergs were reported off the northeastern coast of Newfoundland, but they were most numerous over the region between 41° and 44° N., and 47° and 50° W. The number of bergs observed in June, 1885, exceeded the quantities reported in the same month of previous years, excepting June of 1882, which month was also remarkable for the large number of icebergs observed.

As compared with the chart for the preceding month, (May, 1885) the limits of the ice region have changed as follows, viz: the eastern limit is about one degree to the westward of that for May, but the position of the southern edge indicates that the ice has drifted steadily southward, the limit being more than one degree farther south than that of the preceding month.

The following table shows the comparison between June 1885, and the same month of the three preceding years:

Southern limit.			Eastern limit.		
Date.	Lat. N.	Lon. W.	Date.	Lat. N.	Lon. W.
June, 1882.....	40 18	48 50	June, 1882.....	44 25	42 50
June, 1883.....	39 34	39 46	June, 1883.....	48 14	42 23
June, 1884.....	40 28	51 45	June, 1884.....	44 00	45 23
June, 1885.....	40 42	47 49	June, 1885.....	45 14	41 12
	39 38	48 12		42 30	41 20
				44 51	41 35

Icebergs were reported during June, 1885, as follows:

1st.—S. S. "Assyrian Monarch," between N. 43° 20', W. 47° 38', and N. 43° 00', W. 49° 20', passed several large icebergs; s. s. "Leerdam," in N. 48° 1', W. 45° 0'; at 6.30 p. m. passed an iceberg about one hundred feet high and a quarter of a mile long, bearing n., about two miles distant; also passed several medium-sized bergs between 9 and 12 p. m. The s. s. "Wetherby," in N. 41° 24', W. 46° 38', passed an iceberg; at 8.30 a. m., in N. 41° 25', W. 50° 27', passed another; s. s. "Main," in N. 41° 12', W. 47° 39', passed a small iceberg; s. s. "Elysia," in N. 41° 22', W. 48° 42', passed two icebergs; one low and very dangerous, and the other much larger.

2d.—S. S. "Siberian," in N. 47° 20', W. 49° 20', passed a large iceberg, also passed two small bergs in N. 47° 40', W. 49° 00'; s. s. "Aurania," in N. 40° 48', W. 48° 20', at 9 a. m., sighted five icebergs on the starboard quarter, about three miles distant; temperature of air, 68°; water, 64°; s. s. "City of Chester," in N. 41° 54', W. 51° 4' to W. 51° 30', passed two icebergs, one about one hundred feet long and fifty feet high, and the other much larger; temperature of water, 43°; s. s. "Leerdam," in N. 47° 15', W. 46° 32', at 4.30 a. m., passed two large icebergs about three miles to the northward; one was two hundred feet high and about five hundred feet long, the other about one hundred and fifty feet high and five hundred feet

long; also passed several medium-sized bergs; in N. 46° 42', W. 48° 27', at 2 p. m. passed several large pieces of ice; s. s. "Cephalonia," between N. 41° 20', W. 48° 2', and N. 41° 43' W. 47° 23', passed seven icebergs and some small pieces; s. s. "Catalonia," in N. 40° 40', W. 48° 6', at 6 a. m., passed a large iceberg; s. s. "Wieland," in N. 41° 41', W. 48° 50', passed a small iceberg; s. s. "Fulda," in N. 43° 49', W. 42° 53', passed an iceberg about one hundred feet high; in N. 43° 48', W. 42° 59', passed an icefield and several small pieces, temperature of water, 62° 6; bark "Egeria," from N. 43° 00', W. 47° 00', to N. 41° 00', W. 50° 00', passed a large number of icebergs, some of which were estimated to be three hundred and fifty feet high.

3d.—S. S. "Siberian," in N. 47° 40', W. 48° 56', passed two small icebergs; s. s. "Germanic," between N. 41° 20', W. 48° 2' and N. 41° 13', W. 49° 50', passed six icebergs; s. s. "Fulda," in N. 42° 38', 49° 16', passed floating ice, and between N. 42° 38', W. 50° 38' and N. 42° 38', W. 51° 32', passed three large icebergs, the largest being about three hundred feet high; s. s. "Liscard," in N. 44° 51', W. 41° 35', at 9 a. m., passed several icebergs; s. s. "Britannic," between N. 42° 25', W. 51° 27' and N. 42° 43', W. 49° 40', from 1 p. m. till 7.40 p. m., passed twenty-five icebergs of various sizes; at 9.25 p. m. passed a berg in N. 42° 53', W. 48° 6'.

4th.—Bark "Stormy Petrel," in N. 44° 0', W. 45° to 50°, passed about one hundred icebergs; s. s. "Siberian," in N. 48° 56', W. 45° 21', passed a very large iceberg; s. s. "Ethiopia," from N. 42° 50', W. 48° 30' to N. 42° 20', W. 51° 20', passed seventeen large icebergs and several small icebergs; s. s. "British Crown," in N. 41° 11', W. 47° 22', passed a large iceberg, also, in N. 41° 3', W. 47° 44', passed another; s. s. "Manitoba," in N. 44° 50', W. 46° 12', passed several icebergs; s. s. "Liscard," in N. 44° 53', W. 46° 46', at 10 a. m., passed innumerable icebergs; s. s. "Britannic," in N. 43° 2', W. 47° 52', at 1.50 a. m., passed an iceberg; s. s. "Venetian," in N. 43° 44', W. 48° 49', at 10.50 a. m., passed an iceberg about one hundred and fifty feet high, also, at 0.5 p. m., in N. 43° 41', W. 49° 8', passed another, twenty feet high; at 1 p. m., passed a group of four bergs of various heights and several small pieces.

5th.—S. S. "Servia," between N. 41° 43', W. 48° 32' and N. 41° 32', W. 52° 0', saw numerous icebergs; s. s. "British Queen," in N. 41° 0', W. 47° 10' to 47° 43', from 4 to 7 p. m. passed several icebergs; bark "H. J. Hammond," in N. 42° 0', W. 49° 21', passed four icebergs; the s. s. "Lord Lansdowne," in N. 41° 11', W. 47° 15', at 7.50 a. m., passed an iceberg about seven hundred feet long and in peaks of about eighty feet high; at 10.45 a. m. passed to leeward of another berg about one hundred and thirty feet high and one thousand feet long, square and very massive; temperature, while passing one mile to windward of first berg, air 54°, water 59°; when passing one mile to leeward of the second berg, air 50°, water 50°. Captain Baskill reports: "At noon, having sailed twelve miles to the westward, found air 51°, water 49°, with no ice in sight; therefore the temperature is not a very good guide."

6th.—S. S. "Nessmore," between N. 41° 40', W. 47° 50' and N. 41° 29', W. 48° 30', passed four large icebergs; ship "Ida," in N. 41° 43', W. 47° 15', passed an iceberg about one hundred and fifty feet high; s. s. "Rugia," between N. 41° 56', W. 51° 12' and W. 51° 22', passed six icebergs mostly from one hundred to two hundred feet high; lowest temperature of water, 44°; s. s. "Amérique," in N. 41° 2', W. 48° 40', at 8 a. m., passed an iceberg about one hundred and fifty feet high and two hundred and seventy feet long; s. s. "Sidonian," in N. 41° 20', W. 47° 20', passed an iceberg about fifteen feet high and three hundred and fifty feet long; also passed another in N. 41° 15', W. 48° 24'; bark "H. J. Hammond," in N. 42° 37', W. 51° 0' passed eight icebergs, four of which were very large; s. s. "City of Rome," in N. 40° 50', W. 50° 30', at 5 a. m. passed an iceberg; in 41° 00', W. 49° 50', at 7 a. m. passed another; in N. 41° 21', W. 48° 40', at 11 a. m., passed six bergs.

7th.—S. S. "State of Pennsylvania," between N. 41° 40', W. 48° 21', and N. 41° 33', W. 49° 10', passed ten icebergs; bark "Lynwood," in N. 44° 30', W. 46° 30', passed a large iceberg; ship "Theo. H. Rand," in N. 48° 30', W. 49° 10', passed a large iceberg; s. s. "Elbe," in N. 40° 50', W. 47° 45', at 4.15 p. m. passed a large iceberg, and at 6 p. m. in N. 41° 6', W. 47° 8', passed a medium-sized berg.

8th.—S. S. "Geiser," 10 a. m. in N. 42° 0', W. 48° 18', passed an iceberg; in N. 41° 42', W. 48° 54', passed three bergs at 3 p. m.; temperature of water falling gradually from 61° 7 to 54° 5 and later to 41°; s. s. "Sidonian," in N. 41° 14', W. 49° 45', passed an iceberg one hundred feet high and three hundred feet long; s. s. "Juliet," in N. 41° 16', W. 48° 39', passed a number of large and small icebergs.

9th.—S. S. "City of Chicago," in N. 41° 52', W. 47° 25', passed two large icebergs; s. s. "Gothenburg City," between N. 47° 16', W. 51° 35' and N. 47° 1', W. 52° 25', from 7 a. m. to noon passed eleven large and small icebergs; s. s. "Edam," between N. 43° 45', W. 48° 0' and N. 42° 50', W. 50° 40', passed several icebergs during the 9th and 10th; bark "Carniola," in N. 41°, W. 49°, passed several icebergs; s. s. "Celtic," in N. 41° 42', W. 50° 56', passed a large iceberg; s. s. "Pavonia," in N. 41° 23', W. 49° 36', passed a large iceberg, also in N. 41° 26', W. 48° 32', passed another.

10th.—S. S. "Ems," in N. 41° 10', W. 48° 11' to W. 48° 57', from 11.20 a. m. to 1.30 p. m., passed several small icebergs; s. s. "Adriatic," between N. 44° 58', W. 45° 59', and N. 44° 29', W. 48° 4', passed several icebergs; s. s. "Canada," in N. 41° 14', W. 48° 36', passed two small icebergs and some small ice; s. s. "Monarch," in N. 42° 15', W. 47° 47', from 3 a. m. to 8 p. m., passed ten icebergs and several small pieces; s. s. "Celtic," in N. 43° 6', W. 46° 57', passed a small iceberg.

11th.—S. S. "Furnessia," in N. 43° 29', W. 46° 36', passed three icebergs; s. s. "Illinois," in N. 39° 38', W. 48° 12', passed the remains of an iceberg awash; s. s. "Phoenix," in N. 42° 40', W. 47° to 51°, passed forty-eight icebergs from 11 a. m. of the 11th to 4 a. m. of the 12th. Captain Davies reports: "in N. 42° 40', W. 47° 0', the temperature fell 20° in one hour (from 66° to 46°)." The s. s. "Roman," in N. 41° 26', W. 48° 30', passed seven large icebergs.

12th.—S. S. "Furnessia," between N. 42° 04', W. 50° 57', to N. 42° 05', W. 52° 00', passed six icebergs; s. s. "Rhaetia," between N. 43° 28', W. 46° 00', to N. 43° 13', W. 46° 58', from 8.30 a. m. to noon passed several large and small pieces of ice and three icebergs; temperature of air, 47°; water, 51°; from 1 p. m. to 4 p. m., between N. 43° 13', W. 46° 58' and N. 43° 06', W. 48° 10', passed eight icebergs, three of them very large; temperature of air, 50°; water, 50°; from 4 p. m. to 8.40 p. m., between N. 43° 06', W. 48° 10', to N. 43° 00', W. 49° 20', passed many small patches of ice and thirteen large icebergs, the three last being about one hundred and fifty to two hundred feet in height; temperature of air, 44°; water, 40°; the s. s. "Gallia," between N. 42° 54', W. 46° 16' and N. 42° 09', W. 48° 29', passed several icebergs. Captain Murphy reports "between 8 and 10 a. m. the temperature of the water fell from 61° to 47° as the vessel came abreast of the ice at a distance of three miles. The temperature rose again as the ice was cleared." S. S. "Warwick," between N. 44° 00', W. 46° 40' and N. 42° 47', W. 51° 52', passed a large number of icebergs; schooner "Adelia," in N. 41° 02', W. 47° 00', passed five large icebergs and several small ones; s. s. "Nederland," in N. 41° 02', W. 47° 31', passed two icebergs; in 40° 58', W. 47° 45', passed a large berg.

13th.—S. S. "Nevada," in N. 41° 34', W. 48° 1', at 4.30 p. m., passed two icebergs; in N. 41° 26', W. 48° 29', at 6.40 p. m., passed one large berg; in N. 41° 27', W. 48° 37', at 7.10 p. m., passed a small berg; s. s. "Prussian," in N. 43° 24', W. 45° 50', at 11.45 a. m., passed a large iceberg; at 1.30 p. m., in N. 43° 15', W. 46° 12', passed another large berg; at 4.15 p. m. passed numerous small ones; bark "Lynwood," in N. 41° 12', W. 47° 45', passed five icebergs. Schooner "Adelia," in N. 41° 19', W. 48° 38', saw a large iceberg, also passed two

bergs in N. 48° 48', W. 50° 13'; the s. s. "Fulda," in N. 41° 15', W. 48° 46', at 5.56 p. m., passed a medium-sized berg; in N. 41° 9', W. 48° 39', at 6.15 p. m., passed another, and in N. 41° 31', W. 45° 6', passed a large berg and several small pieces; temperature of air at 5.56 p. m., 57° 2 Fahr. (14° 0 Cent.), water, 55° 4 Fahr. (13° 0 Cent.); at 8 p. m., air, 55° 4 Fahr. (13° 0 Cent.), water, 51° 8 Fahr. (11° 0 Cent.), minimum; s. s. "Wyoming," in N. 41° 41', W. 48° 44', at 10.45 a. m., passed a small iceberg and several pieces of ice.

14th.—S. S. "Nymphœa," between N. 42° 18', W. 48° 10', and N. 42° 0', W. 48° 34', passed twenty-four icebergs, some of which were estimated to be sixty feet high and three hundred feet long; s. s. "Prussian," in N. 42° 32', W. 49° 25', at 2.45 p. m., passed a large iceberg, in N. 42° 13', W. 50° 55', at 8 a. m., passed another; s. s. "St. Laurent," between N. 42° 18', W. 49° 20', and N. 43° 34', W. 45° 47', passed about thirty medium-sized icebergs, mostly to the northward.

15th.—S. S. "Nymphœa," in N. 42° 00', W. 52° 28', passed a large iceberg; in N. 41° 59', W. 42° 01', passed another. S. S. "Rhein," between N. 44° 21', W. 44° 42', and N. 43° 13', W. 45° 05', passed several large and small icebergs; temperature of air, 59°; water, 55° 4; ship "Arbela," in N. 41° 40', W. 48° 00', passed two icebergs.

16th.—S. S. "Greece," in N. 40° 44', W. 48° 38', passed a large iceberg. Captain Lewis, commanding the s. s. "City of Richmond," reported: "saw no ice; on June 16th, from 2.52 a. m., in N. 41° 00', W. 48° 00', to N. 40° 53', W. 49° 20', at 10.40 a. m., had a very dense fog; at 3 a. m. a sudden fall in temperature of the sea-water was observed, going from 64° at 2.30 a. m. to 50° at 3 a. m., and then to 48°; ship going dead-slow; at 10 a. m. the temperature of the water began to rise."

17th.—S. S. "Britannic," between N. 43° 21', W. 48° 00', and N. 42° 50', W. 49° 03', from 9.54 a. m. till 1.56 p. m., passed thirteen icebergs and some detached ice; s. s. "Sussex," between N. 46° 00', W. 44° 00', and N. 45° 30', W. 46° 00', passed two large icebergs; s. s. "Scythia," in N. 43° 09', W. 49° 32', passed a large iceberg; at 11 a. m., in N. 42° 59', W. 51° 40', passed another; s. s. "Virginian," in N. 45° 14', W. 41° 12', at 4 p. m., passed a medium-sized iceberg; s. s. "Grecian," in N. 50° 30', W. 43° 20', passed two large icebergs.

18th.—S. S. "Waldeusian," in N. 42° 30', W. 41° 20', sighted a small iceberg.

19th.—S. S. "Pieter de Coninck," in N. 43° 00', W. 50° 05', at 4 p. m., passed an iceberg; lowest temperature of water, 42°; s. s. "Siberian," in N. 50° 32', W. 42° 10', passed three icebergs; also in N. 50° 12', 43° 45', passed another.

20th.—S. S. "Grecian Monarch," in N. 43° 13', W. 48° to 57°, saw several icebergs; s. s. "State of Georgia," between N. 46° 17', W. 44° 34', and N. 44° 52', W. 46° 38', saw numerous icebergs; s. s. "Ontario," in N. 48° 36', W. 44° 13', passed a large iceberg, in N. 48° 23', W. 45° 27', passed another; s. s. "Siberian," in N. 48° 47', W. 47° 25', passed a large iceberg and much drift-ice.

21st.—S. S. "State of Georgia," between N. 43° 39', W. 48° 50' and N. 42° 58', W. 52° 15', passed numerous icebergs.

22d.—S. S. "Olinde Rodrigues," in N. 42° 27', W. 50° 54', at 1 p. m., passed an iceberg about one hundred feet high and six hundred and fifty feet long; at 7 p. m. in N. 42° 20', W. 52° 22', passed another, one hundred feet high and three hundred feet long. Captain Padel reports: "the proximity of the icebergs (less than two miles) did not cause the temperature of the water to fall more than half a degree; it being between 50° and 51° 8 F., without change." The s. s. "Hammonia," in N. 41° 22', W. 47° 47', passed a large iceberg; s. s. "Siberian," in N. 47° 3', W. 57° 9', passed a large iceberg.

23d.—S. S. "City of Rome," in N. 41° 52', W. 51° 30', passed two icebergs about forty feet high; s. s. "Adriatic," between N. 42° 26', W. 51° 38', and N. 42° 31', W. 50° 29', passed three medium-sized icebergs.

24th.—S. S. "Cephalonia," in N. 41° 23', W. 48° 55', at 2.40 p. m. passed a large iceberg.

25th.—S. S. "Etruria," in N. 41° 12', W. 48° 25', passed a large iceberg.

26th.—S. S. "Austrian," in N. 45° 23', W. 45° 4', passed a large iceberg; in N. 43° 20', W. 45° 36', passed another; s. s. "Circassian," in N. 48° 1', W. 50° 38', passed four icebergs; in N. 47° 56', W. 50° 49', passed five bergs; in N. 46° 53', W. 52° 18', passed one berg, and passed another six miles east of Cape Race.

27th.—S. S. "State of Indiana," in N. 43° 34', W. 45° 51', passed an iceberg and several pieces; s. s. "Westernland," in N. 41° 18', W. 47° 54', passed a large iceberg.

28th.—S. S. "East Anglia," in N. 42° 50', W. 49° 0', to W. 51° 40', from 3 a. m. to 4 p. m., passed about sixty large icebergs; s. s. "Austrian," in N. 43° 13', W. 49° 48', passed a large iceberg; in N. 42° 52', W. 51° 2', passed two bergs, and in N. 42° 12', W. 50° 55' passed one berg.

29th.—S. S. "Baltic," in N. 43° 46', W. 45° 57', passed a small piece of ice; s. s. "Rialto," in N. 41° 0', W. 47° 50', passed a large iceberg; s. s. "York City," in N. 46° 23', W. 43° 54', at 11.40 a. m., saw an immense iceberg.

The following reports are taken from the daily ice reports of the "International Nautical Magazine":

1st to 4th.—Brig "Coma," between N. 49° 5', W. 52° 56' and N. 49° 50', W. 53° 10', passed one hundred and fifty icebergs.

1st.—S. S. "Cydonia," in N. 46° 30', W. 53° 30', passed a large iceberg about ten miles north.

2d.—S. S. "Trinacria," in N. 41° 24', W. 48° 26', passed a medium-sized iceberg.

3d.—S. S. "Celtic," between N. 41° 20', W. 48° 2' and N. 41° 30', W. 49° 50', passed seven icebergs.

8th.—S. S. "California," in N. 41° 50', W. 49° 30', at 4 a. m., passed a large iceberg, and from N. 41° 49', W. 50° 0' to N. 41° 48', W. 51° 30', passed twenty-four icebergs and several pieces of ice.

9th.—S. S. "Brooklyn City," in N. 44° 6', W. 47° 40', passed several large and small pieces of ice; in N. 44° 0', W. 47° 50', at 11 a. m., passed a large iceberg; in N. 44° 0', W. 48° 15', at 3.45 p. m., passed an iceberg about one hundred and fifty feet high and half a mile long.

11th.—S. S. "Martha," in N. 43° 21', W. 46° 25', at 6 p. m., passed several icebergs.

12th.—S. S. "Martha," in N. 42° 9', W. 50° 14', at 4.30 a. m., passed a large iceberg.

14th.—S. S. "St. Simon," in N. 41° 10', W. 49° 30', passed three icebergs, one of which was about one hundred and fifty feet high and about six hundred feet long; also large quantities of broken ice.

15th.—S. S. "Ludgate Hill," between N. 45° 11', W. 45° 19' and N. 44° 45', W. 47° 8', passed about thirty-five icebergs of various sizes; s. s. "W. A. Scholten," between N. 43° 46', W. 47° 8' and N. 43° 29', W. 48° 1', passed fourteen icebergs.

16th.—S. S. "W. A. Scholten," in N. 42° 55', W. 49° 46', at 4 a. m. passed two icebergs; in N. 42° 38', W. 50° 38', passed several bergs.

20th.—S. S. "Hekla," in N. 46° 20', W. 44° 30', at 2 p. m., passed several icebergs.

21st.—S. S. "Jersey City," from N. 46° 21', W. 44° 36' to N. 46° 1', W. 45° 32', passed two icebergs.

22d.—S. S. "Jersey City," in N. 44° 56', W. 49° 0', passed a very large iceberg.

SIGNAL SERVICE AGENCIES.

Signal Service agencies have been established in the Maritime Exchange buildings at New York and Philadelphia, and in the Custom-House, Boston, where the necessary blanks and other information will be furnished to ship-masters. In the REVIEW for January, 1885, was published an explanation of the object of these agencies.

In pursuance of the arrangements made with the Meteorological Office of London, England, there were cabled to that office from New York during June, 1885, twenty reports con-

cerning storms and icebergs encountered by vessels in the Atlantic west of the forty-fifth meridian; seven messages were sent from Boston.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada for June, 1885, is exhibited on chart ii. by the dotted isothermal lines; and in the table of miscellaneous meteorological data are given the means for the various stations of the Signal Service.

On chart iv. the departures from the normal temperatures are graphically exhibited by the lines connecting stations of equal departure, and in the table of miscellaneous data are given the departures for the several stations.

From chart iv. it will be seen that the temperature for June was below the normal in all districts except along the New England coast, in portions of Idaho, Washington Territory, and the Gulf states. The departures below the normal nowhere exceeded 5°, and except in the middle and southern plateau districts and portions of the Ohio valley and lake region, they have been less than 4°.

In the districts where the mean temperatures were above the normal the departures have been slight, only three stations showing deviations of more than 1°, viz: Olympia, Washington Territory, 2°.6; Galveston, Texas, 1°.6; and New Orleans, Louisiana, 1°.2.

In the following table are given the mean temperatures for the several geographical districts with the normals and departures, as deduced from the Signal Service observations:

Average temperatures for June, 1885.

Districts.	Average for June, Signal-Service observations.		Comparison of June, 1885, with the average for several years.
	For several years.	For 1885.	
New England	64.3	64.1	— 0.2
Middle Atlantic states.....	70.7	69.7	— 1.0
South Atlantic states.....	76.9	76.5	— 0.4
Florida peninsula.....	80.8	80.6	— 0.2
Eastern Gulf states.....	78.7	79.1	+ 0.4
Western Gulf states.....	80.1	80.5	+ 0.4
Rio Grande valley.....	84.2	83.5	— 0.7
Tennessee.....	75.9	76.0	+ 0.1
Ohio valley.....	73.2	70.7	— 2.5
Lower lake region.....	67.0	64.1	— 2.9
Upper lake region.....	61.5	59.4	— 2.1
Extreme northwest.....	62.6	60.4	— 2.2
Upper Mississippi valley.....	71.0	69.7	— 1.3
Missouri valley.....	69.8	68.3	— 1.5
Northern slope.....	72.3	59.8	— 12.5
Middle slope.....	70.0	68.6	— 1.4
Southern slope.....	77.9	77.5	— 0.4
Southern plateau.....	75.3	71.7	— 3.6
Middle plateau.....	65.9	61.8	— 4.1
Northern plateau.....	65.0	63.9	— 1.1
North Pacific coast region.....	60.6	60.4	— 0.2
Middle Pacific coast region.....	64.6	62.1	— 2.5
South Pacific coast region.....	71.9	70.1	— 1.8
Mount Washington, N. H.....	43.9	46.2	+ 2.3
Pike's Peak, Colo.....	32.7	29.8	— 2.9

RANGES OF TEMPERATURE.

The monthly, and the greatest and least daily ranges of temperature are given in the table of miscellaneous data.

The monthly ranges were greatest in the extreme northwest and in the Rocky mountain districts; they were least at the stations on the Gulf and Pacific coasts. The following are some of the extreme monthly ranges: greatest, 77° at Phoenix, Arizona; 63°.5 at Wilcox, Arizona; 61°.3 at San Carlos, Arizona; and 60°.5 at Fort Benton, Montana; least, 17°.5 at San Francisco, California; 18°.6 at Galveston, Texas; and 19°.3 at Fort Canby, Washington Territory.

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for the several geographical districts; in the table of